

REMARKS

Claims 1 to 27 are pending in the present application, of which claims 1, 14, 15, 21 and 27 are the independent claims currently under consideration. In the above amendments, new claims 21 to 27 have been added.

As set forth above, new claims 21 to 27 have been added, directed to an apparatus for estimating noise in an Orthogonal Frequency Division Multiplexing (OFDM) system, and to a computer-readable medium embodying a program of instructions executable by a processor to perform a method of estimating noise in an Orthogonal Frequency Division Multiplexing (OFDM) system. Support for the subject matter of new claims 21 to 27 can be throughout the application as originally filed, including in original claims 14 to 20 and in paragraphs [0090]-[0092] of the specification.

The drawings were objected to under 37 C.F.R. § 1.84(p)(5) for allegedly omitting reference numeral 520a referred to in paragraph [0026] the specification. In this regard, Applicants have amended the specification as set forth above to replace the references to numeral “520a” with the correct reference numeral “220a.” Accordingly, corrected drawing sheets are not believed to be necessary, and reconsideration and withdrawal of the objection to the drawings are respectfully requested.

The specification was objected to for a minor typographical error. As set forth above, the specification has been amended to address this error. No new matter is believed to have been added to the application with these amendments. Reconsideration and withdrawal of the objection to the specification are respectfully requested.

Claims 1 to 8 and 12 to 20 were rejected under 35 U.S.C. §102(e) over U.S. Patent No. 7,016,651 (“Narasimhan”); claim 9 was rejected under 35 U.S.C. §103(a) over Narasimhan in view of U.S. Patent No. 7,197,085 (“Vella-Coleiro”); claim 10 was rejected under 35 U.S.C. §103(a) over Narasimhan in view of U.S. Patent No. 6,757,241 (“Jones”); and claim 11 was rejected under 35 U.S.C. §103(a) over Narasimhan in view of Jones and further in view of U.S. Patent No. 6,549,561 (“Crawford”). Applicants have reviewed the applied references and respectfully submit that the claimed invention is patentably distinguishable over the applied references for at least the following reasons.

The applied references are not seen to disclose or suggest the features of the claimed invention, particularly with respect to at least the features of (i) detecting a received power of a signal in an unassigned sub-carrier frequency band (as in claim 1), (ii) determining a power of a signal in a frequency band corresponding to an unassigned sub-carrier (as in claims 14 and 27), or (iii) determining a noise estimate based in part on a received power level in a frequency band corresponding to an unassigned sub-carrier (as in claims 15 and 21).

Narasimhan is seen to be generally directed to measuring signal quality. In particular, Narasimhan is seen to disclose measuring signal quality in a communications link supporting OFDM symbol transfer across plural sub-carriers. Narasimhan, Abstract. Sub-carrier subsets are used to derive a geometric signal-to-noise ratio (SNR_{geo}) estimate. Narasimhan, Abstract. Narasimhan discloses that a sufficient number of sub-carriers must be selected as subset members to constitute a representative sample of all the sub-carriers, in order to provide computational efficiency. Narasimhan, col. 2, ll. 36-43. Narasimhan is entirely silent, however, as to whether or not any of the sub-carriers in the subset are assigned to a communication link. Indeed, a search of the disclosure of Narasimhan turns up not a single instance of the word “assign,” “assigned,” or “unassigned.” The Office Action appears to suggest that because Narasimhan discloses that only a subset of sub-carriers are used to derive a SNR_{geo} estimate, the remaining sub-carriers not used to derive the estimate are “unassigned.” See Office Action, p. 5. Nowhere, however, is Narasimhan seen to disclose whether or not any of the sub-carriers are assigned to a communication link (*cf.* ¶¶ [0056]-[0057] of the present application). Accordingly, Narasimhan is not understood to disclose, or even to suggest, detecting a power of a signal in an *unassigned* sub-carrier frequency band.

“A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference.” Verdegaal Bros. v. Union Oil Co. of California, 814 F.2d 628, 631 (Fed. Cir. 1987); *see also* MPEP § 2131. Because Narasimhan fails to disclose or suggest the features of independent claims 1, 14, 15, 21 and 27, at least with respect to the features of (i) detecting a received power of a signal in an unassigned sub-carrier frequency band, (ii) determining a power of a signal in a frequency band corresponding to an unassigned sub-carrier, or (iii) determining a noise estimate based in part on a received power level in a frequency band corresponding to an unassigned sub-carrier, these

claims are believed to be patentably distinguishable over the applied reference, and reconsideration and withdrawal of the 35 U.S.C. § 102(e) rejection of these claims are respectfully requested.

Vella-Coleiro, Jones and Crawford, which were used in the rejection of certain dependent claims, are not seen to remedy the foregoing deficiencies of Narasimhan. Vella-Coleiro is seen to be generally directed to frequency-dependent magnitude pre-distortion for reducing spurious emissions. *See* Vella-Coleiro, Abstract. Jones is seen to be generally directed to a spatial processor that exploits signals that arrive via multiple outputs of a communication channel to provide soft decision values. *See* Jones, Abstract. Crawford is seen to be generally directed to a pilot phase tracking loop for an OFDM receiver. *See* Crawford, Abstract. Nowhere is Vella-Coleiro, Jones or Crawford seen to disclose or suggest detecting a power of a signal in an unassigned sub-carrier frequency band.

Accordingly, the applied references, whether taken alone or in combination, are not seen to disclose or suggest the features of independent Claims 1, 14, 15, 21 and 27, particularly with respect to at least the features of (i) detecting a received power of a signal in an unassigned sub-carrier frequency band, (ii) determining a power of a signal in a frequency band corresponding to an unassigned sub-carrier, or (iii) determining a noise estimate based in part on a received power level in a frequency band corresponding to an unassigned sub-carrier.

The other claims currently under consideration in the application are dependent from the independent claims discussed above and therefore are believed to be allowable over the applied references for at least the same reasons. Because each dependent claim is deemed to define an additional aspect of the invention, however, the individual consideration of each on its own merits is respectfully requested.

REQUEST FOR ALLOWANCE

In view of the foregoing, Applicants submit that all pending claims in the application are patentable. Accordingly, reconsideration and allowance of this application is earnestly solicited. Should any issues remain unresolved, the Examiner is encouraged to telephone the undersigned at the number provided below.

Respectfully submitted,

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